Your grade: 97.50%

Your latest: **97.50%** • Your highest: **97.50%** • To pass you need at least 80%. We keep your highest score.

Next item

1. In the "ApplyingEdgeDetection.mlx" reading, use the following settings and run the code: 1 / 1 point

- A standard deviation of 1.0 for the Gaussian filter
- Use the "nothinning" option with default threshold for the "sobel" method
- Use `[0.05 0.4]` as the threshold for the "canny" method.

Which approach best detects the center lanes in the road? Here better means the edges are more continous with fewer holes. You should see something like the image below for one approach.

- ○ Sobel
- ◉ Canny
- ○ Both give very similar results.

Correct

2. In the "ApplyingEdgeDetection.mlx" reading, what happened to the detected edges when you increased the standard deviation of the Gaussian filter (recall that the "nothinning" option was used). Selet all that apply. 1 / 1 point

- ☐ There are more detected edges.
- ☑ There are fewer detected edges.

Correct

- ☑ The detected edges are thicker.

Correct

- ☐ The detected edges are thinner.

3. Assume you've used a 5x5 filter averaging filter to slightly blur an image, but the resulting image is not blurred enough. What approach below will increase the amount of blur? 1 / 1 point

- ◉ Increase the size of the filter.
- ○ Decrease the size of the filter.
- ○ Switch to a Gaussian filter.

Correct
By averaging over more pixels, the amount of blur will be greater.

4. What type of filter below can help reduce noise in an image? 1 / 1 point

- ○ sobel
- ◉ average
- ○ motion

Correct
Averaging filters are often used to reduce noise in images.

5. True or False: the **edge** function with the "sobel" method reduces detected edges to 1 pixel width by default. 1 / 1 point

- ◉ True
- ○ False

Correct
You can skip this step to return the full edges using the "nothinning" option.

6. To reduce the number of detected edges in an image, what approach can you use with the **edge** function? Select all that apply. 0.8 / 1 point

- ☑ Increase the threshold option.

Correct

- ☐ Decrease the threshold option
- ☐ Try a different algorithm
- ☑ Apply a Gaussian filter with a larger standard deviation.

Correct

- ☐ Segment the image first.

You didn't select all the correct answers

7. Why is it recommended to use a Gaussian filter before detecting edges? 1 / 1 point

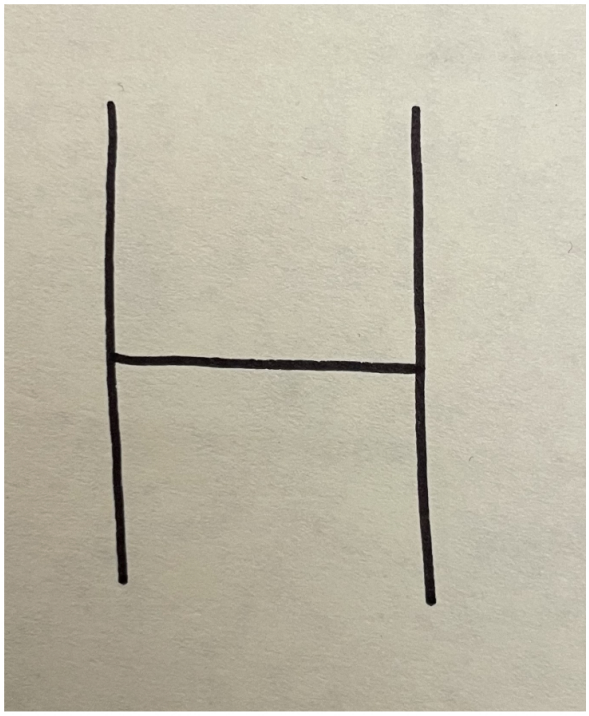
- ○ The Gaussian filter makes edges more pronounced and easier to detect.
- ◉ A Gaussian filter helps reduce noise. It also preserves edges better than an average filter.
- ○ You should not apply any filter before detecting edges.

Correct

8. ## Visualizing Gradients

1 / 1 point

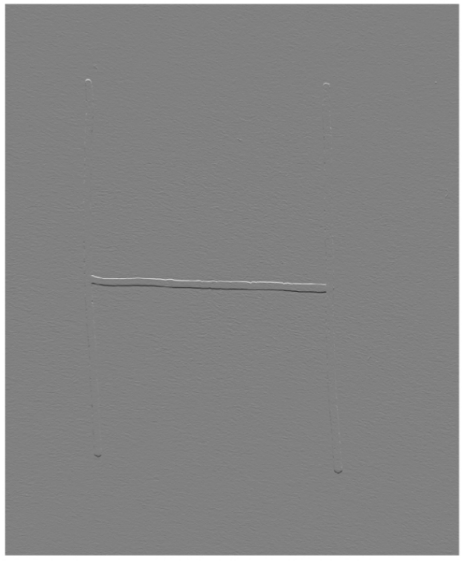
Consider using edge detection for handwriting analysis of the following image:



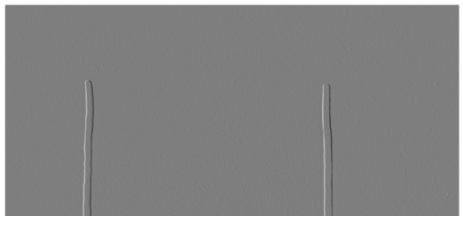
Which of the following represents the **vertical gradient** of the image's edge detection?

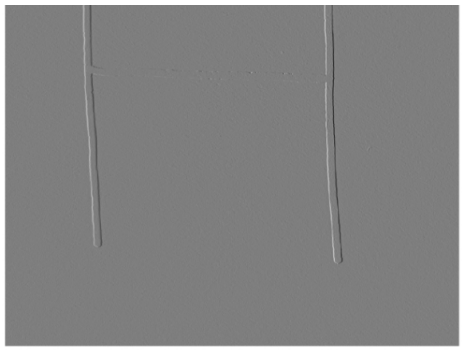
Note: this image was first filtered with `imgaussfilt`.

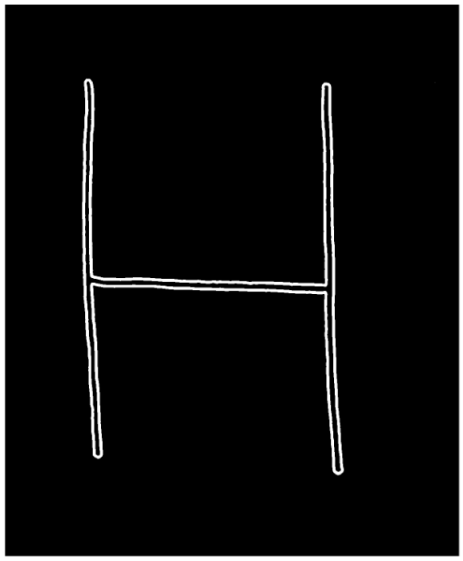
◉



○







Correct
Notice how the strongest edge is the center of the "H". Since edges are found perpendicular to the gradient, the vertical gradient is largest where there are strong horizontal edges.